



PHYSICS

FYD202 Microcontrollers Basics, 7.5 higher education credits

Mikrocontrollers, grundkurs, 7,5 högskolepoäng

First Cycle

Confirmation

This course syllabus was confirmed by Department of Physics on 2008-11-24 to be valid from 2009-05-01.

Field of education: Science 100%

Department: Physics

Position in the educational system

Basic course in the main subject physics.

The course can be part of the following programme: 1) Computer Aided Measurements in Physics (N1DAF)

Main field of studies

Physics

Physics

Specialization

G1N, First Cycle, has only upper-secondary level entry requirements

G1F, First Cycle, has less than 60 credits in first-cycle course/s as entry requirements

Entry requirements

In addition to general entry requirements, basic knowledge in electronics and digital technology is required, the equivalent courses FYD100 and FYD110.

Learning outcomes

After having gone through the course Microcontrollers the student should:

- be able to design a microcomputer in detail with regard to both hardware and software.

- based on a given programming problem be able to retrieve a flowchart for the programme and translate this into an algorithm in assembler.
- be able to program PIC controllers in assembler
- understand the difference between RISC and CISC computers.
- fully master the standard I/O units in the PIC16F84.
- understand the importance to develop programme in a structured way as well as to acquire a working method that is characterised by structured software development.

Course content

Introduction to MPLAB environment and assembly programming. Presentation of the PIC controller 16F84. Description of different oscillator alternatives and other I/O units components. Program memory and RAM memory. Program Design with flowcharts. Assembler directives. Input and output of data: binary switches and seven segment displays. Subroutines, simulation, handling of header files and radix. Interrupt and timer. Watchdog and sleep function Stepper motor control

Form of teaching

The course consists of lectures and laboratory sessions.

Language of instruction: Swedish

Assessment

Examination takes place through compulsory laboratory sessions where presentation of assignments takes place running during the course. Passing the course requires that they in the course the included laboratory sessions been presented and approved. For students who have not passed at the regular test and presentation session, additional examination sessions are offered. Student who has failed two times in test for course, or part of course, has the right to request another examiner. The application is sent to the relevant department. Final course grade is received then all compulsory components passed.

Grades

The grading scale comprises: Fail (U), Pass (G), Pass with Distinction (VG). For the grade Pass, passed laboratory sessions as well as passed written assignments are required and for the grade Pass with distinction is required presentation of additional laboratory sessions.

Course evaluation

Course evaluation is carried out by students and teachers during the course as well as at the end of the course.

Additional information

Lectures and laboratory sessions are conducted in ET laboratory, Physics Research building.